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EXAMINER	
TRAN, DZUNG D	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/045,661	ALWAN ET AL.	
	Examiner	Art Unit	
	Dzung D Tran	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-3,12-22 and 30-45* is/are allowed.

6)☒ Claim(s) *4,5,8,9,23,24 and 29* is/are rejected.

7)☒ Claim(s) *6,7,10,11 and 25-28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03/25/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 23 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Traa U.S. patent no. 6,222,660.

Regarding claim 23, Traa discloses a system configured for controlling incoming laser power in a communication system which includes a first node and a second node where the second node transmits a communication beam to the first node, the system comprising:

a first node having a photodiode detector 10 (col. 2, line 40) configured to receive an incoming communication beam (see figure 1);

a first optical attenuator 26 (col. 2, line 59) coupled to the first node and configured to attenuate the incoming communication beam prior to it reaching the photodiode detector 10 (see figure 1);

a second node configured to transmit the incoming communication beam(e.g. the first node includes optical signal source 24 for transmitting the communication beam); and

a first attenuation control module (e.g. controller 18, col. 2, line 65) configured to control the first optical attenuator to maintain a power level of the incoming communication beam to within an operational range of the photodiode detector (col. 2, line 65-67).

Regarding claim 24, Traa further discloses in col. 3, lines 1-6, the obtaining an optimum bias voltage for the APD by controlling the attenuator base on a family of constant optical power level curves are generated (see figure 2), with each optical power level being determined by the programmable optical attenuator 26 in response to the attenuation command from the controller 18 (equivalent to first attenuation control) is configured to disable (e.g. decrease the attenuation level to minimum) and enable (e.g. increase the attenuation level to maximum) the first optical attenuator to keep the power level of the incoming communication beam to within the operational range of the photodiode detector.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to

a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Traa U.S. patent no. 6,222,660 in view of Shuke U.S. patent no. 6,031,219.

Regarding claim 8, Traa discloses in figure 1 an adaptive power supply for an avalanche photodiode (APD) is used to determine an optimum bias voltage in an optical communication system (abstract), the system comprising:

a current sense module (elements 16, 14, col. 2, line 30) configured to measure a receive (Rx) power output value for an APD 10 (col. 2, line 36), a controller 18 configured to provide the high voltage control signal to the voltage source 12 (col. 2, line 42), wherein the high voltage control signal is based on the Rx power output value and a high voltage source 12 to provide voltage to the current sensing 16. Traa differs from claim 4 of the present invention in that Traa does not disclose a high voltage control (HVC) configured to provide a variable voltage bias to the APD in accordance with a high voltage control signal. Shuke, from the same field of endeavor, discloses a bias voltage supply circuit includes a variable high voltage generation circuit 11 (equivalent to HVC), see col. 3, line 32, to provide voltage to the APD detector 10 (col. 3, lines 50-52). At the time of the invention was made, it would have been obvious to an artisan to include the variable high voltage generation circuit 11 of Shuke in the system of Traa. One of ordinary skill in the art would have been motivated to do this in order to adjust the bias voltage supplied from voltage generation circuit 15 to increase the production efficiency of the receiver, so that the production cost of the receiver can be reduce (col. 7, lines 6-11 of Shuke).

Regarding claim 9, Shuke further discloses the current sense module 12 includes a first series resistor 13 located between the APD 2a. At the time of the invention was made, it would have been obvious to an artisan to include the current sense module 12 of Shuke in the system of Traa. One of ordinary skill in the art would have been motivated to do this in order to obtain a constant value regardless of a change of the bias voltage of the APD (col. 5, lines 18-24 of Shuke).

5. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Traa U.S. patent no. 6,222,660 in view of Shuke U.S. patent no. 6,031,219 and further in view of Hoffe et al. U.S. Patent no. 6,313,459.

Regarding claim 4, Traa discloses in figure 1 an adaptive power supply for an avalanche photodiode (APD) is used to determine an optimum bias voltage in an optical communication system (abstract), the system comprising:

a current sense module (elements 16, 14, col. 2, line 30) configured to measure a receive (Rx) power output value for an APD 10 (col. 2, line 36), a controller 18 configured to provide the high voltage control signal to the voltage source 12 (col. 2, line 42), wherein the high voltage control signal is based on the Rx power output value and a high voltage source 12 to provide voltage to the current sensing 16. Traa differs from claim 4 of the present invention in that Traa does not disclose a high voltage control (HVC) configured to provide a variable voltage bias to the APD in accordance with a high voltage control signal. Shuke, from the same field of endeavor, discloses a bias voltage supply circuit includes a variable high voltage generation circuit 11 (equivalent

to HVC), see col. 3, line 32, to provide voltage to the APD detector 10 (col. 3, lines 50-52). At the time of the invention was made, it would have been obvious to an artisan to include the variable high voltage generation circuit 11 of Shuke in the system of Traa. One of ordinary skill in the art would have been motivated to do this in order to adjust the bias voltage supplied from voltage generation circuit 15 to increase the production efficiency of the receiver, so that the production cost of the receiver can be reduce (col. 7, lines 6-11 of Shuke). The combination of Traa and Shuke does not disclose a thermal sensor configured to measure a temperature of the APD. Hoffe, from the same field of endeavor, discloses in figure 2, a thermistor 218 (equivalent to thermal sensor) connected to the APD 202 for measuring a temperature of the APD 202 to provide information to a processor 204. At the time of the invention was made, it would have been obvious to an artisan to include the thermistor of Hoffe in the system of Traa and Shuke. One of ordinary skill in the art would have been motivated to do this in order to establishes the optimum bias voltage on APD for optimizing the gain of a variable gain APD over a wide range of ambient temperatures (abstract, col. 2, lines 1-5 of Hoffe).

Regarding claim 5, Shuke further discloses the current sense module 12 includes a first series resistor 13 located between the APD 2a and the variable high voltage generation circuit 11 (equivalent to HVC) configured to measure a conduction value for the APD, and includes a first differential amplifier 14 configured to amplify the measured conduction. At the time of the invention was made, it would have been obvious to an artisan to replace the current sense module 12 of Shuke with a current sense module of Traa. One of ordinary skill in the art would have been motivated to do

this in order to sensing a current of the APD and output an amplified signal have such voltage that can be treated easily (col. 3, lines 58-60 of Shuke).

6. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Javitt et al. U.S. patent no. 6,381,055 in view of Traa U.S. patent no. 6,222,660.

Regarding claim 29, Javitt discloses a two ways communication system comprising at least two nodes (see figure 5) in that each node having transceiver 315, 325 (including a transmitter and a receiver) and a retro-reflector 321 for reflecting the incoming communication beam 311 to form an outgoing communication beam 312 (see col. 9, lines 5-7), a first node having transceiver 315 including a photodiode detector configured to receive an incoming communication beam (see figure 5A); a second node having transceiver 325 including a transmitter configured to transmit the incoming communication beam. Javitt differs from claim 29 of the present invention in that he does not disclose the transceiver 315, 325 includes a receiver having an optical attenuator coupled to the nodes and configured to attenuate the incoming communication beam prior to it reaching the photodiode detector. Traa discloses a system configured for controlling incoming laser power in a communication system comprising:

an optical attenuator 26 (col. 2, line 59) coupled to the node and configured to attenuate the incoming communication beam prior to it reaching the photodiode detector 10 (see figure 1); and

an attenuation control module (e.g. controller 18, col. 2, line 65) configured to control the first optical attenuator to maintain a power level of the incoming communication beam to within an operational range of the photodiode detector (col. 2, line 65-67). At the time of the invention was made, it would have been obvious to an artisan to incorporate the receiver having an optical attenuator and an attenuation control module taught by Traa in the system of Javitt. One of ordinary skill in the art would have been motivated to do this in order to attenuate the incoming communication beam prior to it reaching the photodiode detector to obtain an optical digital data application an envelope as a function of optical power levels within which a bit error rate for the optical digital data is zero. (col. 3, lines 26-30).

7. Claims 6, 7, 10, 11 and 25-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 1-3 are allowed. The following is an examiner's statement of reasons for allowance: The prior art of records does not teach or suggest the limitations "an actuator coupled to the first node and configured to move the APD and a processor configured to control the alignment of the movable APD with the incoming communication beam based on the RSSI and the Rx power signal and further configured to enable and disable the optical attenuator" in claim 1. The closest prior art, Traa U.S. patent no. 6,222,660 discloses a method for calibrating an avalanche

photodiode detector (APD) for use in an optical communication system and Shuke U.S. patent no. 6,031,219 discloses a bias voltage supply circuit for photoelectric converting, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

9. Claims 12-14 are allowed. The following is an examiner's statement of reasons for allowance: The prior art of records does not teach or suggest the limitations "lowering a bias voltage for the APD to zero volts; once lowered, measuring an initial conduction for the APD and storing the initial conduction" in claim 12. The closest prior art, Traa U.S. patent no. 6,222,660 discloses a method for calibrating an avalanche photodiode detector (APD) for use in an optical communication system and Shuke U.S. patent no. 6,031,219 discloses a bias voltage supply circuit for photoelectric converting, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

10. Claims 15 and 17 are allowed. The following is an examiner's statement of reasons for allowance: The prior art of records does not teach or suggest the limitations "setting a voltage bias for an APD and reducing the voltage bias of the APD such that a gain value applied to the photo current is reduced, wherein an operational dynamic range of the APD is increased" in claim 15. The closest prior art, Traa U.S. patent no. 6,222,660 discloses a method for calibrating an avalanche photodiode detector (APD) for use in an optical communication system and Shuke U.S. patent no. 6,031,219 discloses a bias voltage supply circuit for photoelectric converting, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

11. Claims 16, 18-22 are allowed. The following is an examiner's statement of reasons for allowance: The prior art of records does not teach or suggest the limitations "determining the receive power level exceeds the saturation threshold level of the photodiode detector; if the Rx power level exceeds the saturation threshold level of the photodiode detector, enabling a first optical attenuator that is located in a path between the first communication beam and the photodiode detector; and if the Rx power level is below a minimum threshold level of the photodiode detector, disabling the first optical attenuator" in claim 16. The closest prior art, Traa U.S. patent no. 6,222,660 discloses a method for calibrating an avalanche photodiode detector (APD) for use in an optical communication system and Shuke U.S. patent no. 6,031,219 discloses a bias voltage supply circuit for photoelectric converting, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

12. Claims 30-38 are allowed. The following is an examiner's statement of reasons for allowance: The prior art of records does not teach or suggest the limitations "an actuator configured to align the APD with the communication beam and a processor configured to control the actuator based on a combined power signal which includes the RSSI and the Rx power signal" in claim 30. The closest prior art, Traa U.S. patent no. 6,222,660 discloses a method for calibrating an avalanche photodiode detector (APD) for use in an optical communication system and Shuke U.S. patent no. 6,031,219 discloses a bias voltage supply circuit for photoelectric converting, either

singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

13. Claims 39-45 are allowed. The following is an examiner's statement of reasons for allowance: The prior art of records does not teach or suggest the limitations "determining a received signal strength indicator (RSSI) from the voltage signal and aligning the APD with the communication beam based on the RSSI and the Rx power signal" in claim 39. The closest prior art, Traa U.S. patent no. 6,222,660 discloses a method for calibrating an avalanche photodiode detector (APD) for use in an optical communication system and Shuke U.S. patent no. 6,031,219 discloses a bias voltage supply circuit for photoelectric converting, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Dunne U.S. patent no. 6,055,490. Apparatus and method for dertermining precision reflectivity of highway signs

b. Keydar U.S. patent no. 5,837,996. Eye protection system wherein a low power laser controls a high power laser

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung D Tran whose telephone number is (571) 272-3025. The examiner can normally be reached on 9:00 AM - 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dzung Tran
02/17/2005

Dzung Tran